

**PROFESSIONAL PERFORMANCE AND DEVELOPMENT RECORD**

1. NAME: David A. Kidwell POSITION TITLE: Research Chemist

BRANCH: Surface Chemistry

2. NRL EMPLOYMENT RECORD:

GRADE	DATE OF ENTRY INTO GRADE
GS-12	September 1984
GS-13	April 1986
GS-14	July 1997

3. EDUCATION:

1982-1984 NRC-NRL Post Doctoral Associateship at the Naval Research Laboratory under Richard Colton. Primary studies: SIMS of organic and biomolecules.

1977-1982 Ph.D. Organic Chemistry, Massachusetts Institute of Technology under Klaus Biemann. Primary studies: EI-GC/MS, HPLC, FTNMR.

1973-1977 BS Chemistry, *Magna cum laude*, University of North Carolina at Greensboro. Primary studies: Organic chemistry.

*Continuing Education:*

Situational Leadership, November 1996

American Chemical Society Short Course on Dispersion of Fine Particles in Liquids, August 1992

NRL on Negotiate to Win by The Cooper Management Institute, June 1992

Bethesda Research Laboratories on Recombinant DNA Techniques Workshop, June 1989

NRL on Management Skills for New Supervisors, October 1988

American Chemical Society Short Course on Chemical Challenges on Immunology, August 1987

American Chemical Society Short Course on Liquid Chromatography/Mass Spectrometry, April 1985

University of Maryland course on Transmission Electron Microscopy, September 2010

4. SOCIETY MEMBERSHIPS:

American Chemical Society

Association for the Advancement of Science

Society of Hair Testing (past)

5. PRESENT DUTIES:

I am responsible for directing and managing several research programs to: 1) develop tagging and tracking of individuals via biometrics, 2) develop and apply ultra-trace analytical methods for materials in the environment and on surfaces, 3) work with the recently acquired Helium Ion Microscope to image nanoparticles and biological entities and write small patterns, 4) develop ion-selective electrodes as a means to communicate from and to neurites as part of the Protonics program, 5) commercialize my invention on catalytic nanoparticles for use in lateral flow immunoassays, 6) expand the detection system in lateral flow immunoassays from only visual detection to electronic detection as a new 6.2 project. I interact with the drug deterrent and LENR community and have close contacts at several universities and commercial companies. I am also responsible for transferring technology to other Navy facilities and the commercial sector.

6. PRODUCTIVITY

See attached.

## 6. PRODUCTIVITY

### A. Papers Published in Refereed Journals

1. W.C. Herlihy, D.A. Kidwell, B. Meeusen, and K. Biemann, "Mass Spectrometric Differentiation of Leucine and Isoleucine in Proteins Derived from Bacteria or Cell Culture", *Biochem. Biophys. Res. Comm.*, **102** (1981) 335.
2. D.A. Kidwell and K. Biemann, "Determination of double-bond position and geometry of olefins by mass spectrometry of their Diels-Alder adducts", *Anal. Chem.*, **54** (1982) 2462.
3. G.C. Li, D.A. Kidwell, D.W. Brown, E.E. Hall, and G.E. Wnek, "Characterization of Polyacetylene by Ozonolysis", *J. Poly. Sci-Poly. Chem.*, **21** (1983) 301.
4. D.A. Kidwell, M.M. Ross, and R.J. Colton, "Sequencing of Peptides by Secondary Ion Mass Spectrometry", *Journal American Chemical Society*, **106** (1984) 2219.
5. M.M. Ross, D.A. Kidwell, and J.E. Campana, "Analysis of Impregnated Charcoals by Desorption Ionization Mass Spectrometry", *Anal. Chem.*, **56** (1984) 2142.
6. D.A. Kidwell, M.M. Ross, and R.J. Colton, "Sequencing of Peptides by SIMS from the C or N Terminus", in *Springer Ser. Chem. Phys.*, **36** (1984) 412.
7. M.M. Ross, D.A. Kidwell, and R.J. Colton, "Selective Detection of Aldehydes and Ketones by Derivatization/Secondary Ion Mass Spectrometry", *Int. J. Mass Spectrom. Ion Proc.*, **63** (1985) 141.
8. R.J. Colton, J.E. Campana, D.A. Kidwell, M.M. Ross, and J.R. Wyatt, "Molecular Secondary Ion Mass Spectrometry: New Dimensions in Chemical Characterization", *Appl. Surf. Sci.*, **21** (1985) 168.
9. D.A. Kidwell, M.M. Ross, and R.J. Colton, "Enhanced Detection of Drugs in Complex Mixtures by Derivatization/Secondary Ion Mass Spectrometry", *Biomed. Mass Spectrom.*, **12** (1985) 254.
10. R.J. Colton, M.M. Ross, and D.A. Kidwell, "Secondary Ion Mass Spectrometry: Polyatomic and Molecular Ion Emission", *Nucl. Instrum. Meth. Phys. Res.*, **B13** (1986) 259-277.
11. D.A. Kidwell, M.M. Ross, and R.J. Colton, "The Mechanism of Ion Production in Secondary Ion Mass Spectrometry", *Int. J. Mass Spectrom. Ion Proc.*, **78** (1987) 315-328.
12. D.A. Kidwell, "Superabsorbent Polymers - Media for the Enzymatic Detection of Ethyl Alcohol in Urine", *Anal. Biochem.*, **182** (1989) 257-261.
13. M.M. Ross, D.A. Kidwell and J. Callahan, "Mass Spectrometric Analysis of Anatoxin-a", *Anal. Toxicology*, **13** (1989) 317-321.

14. S.M. Conyers and D.A. Kidwell, "Chromogenic Substrates for Horseradish Peroxidase", *Anal. Biochem.*, **192** (1991) 207-211.
15. F.P. Smith and D.A. Kidwell, "Isomeric Amphetamines - A Problem for Urinalysis?", *Forensic Science International*, **50** (1991) 153-165.
16. R.H. Smith, P.A. Craig, and D.A. Kidwell, "Drugs of Abuse in Saliva: A Review", W. Schramm, *Journal of Analytical Toxicology*, **16** (1992) 1-9.
17. D.A. Kidwell, "Analysis of Phencyclidine and Cocaine in Human Hair by Tandem Mass Spectrometry", *Journal of Forensic Science*, **38** (1993) 272-284.
18. D.L. Blank and D.A. Kidwell, "External Contamination of Hair by Drugs of Abuse: An Issue in Forensic Interpretation", *Forensic Science International*, **63** 145-156(1993).
19. D.A. Kidwell and D.L. Blank, "Comments on Sample Preparation Techniques", *Forensic Science International*, **63** (1993) 137-143. (invited commentary)
20. D.A. Kidwell, "Testing for Drug Use via Hair Analysis", *European Scientific Notes Information Bulletin*, **93-08** (October 1993) 514-520.
21. G.U. Lee, D.A. Kidwell, and R.J. Colton, "Sensing Discrete Streptavidin-Biotin Interactions with Atomic Force Microscopy", *Langmuir* **10** (1994) 354-357.
22. F.P. Smith and D.A. Kidwell, "A discussion of opiate concentrations in hair (Kintz, P. and Mangin, P., "Opiate concentrations in human head, axillary, and pubic hair," *Journal of Forensic Sciences*, Vol. 38, No. 3, May 1993, pp. 657-662.), *J. Forensic Science*, **39** (1994) 301-303.
23. D.A. Kidwell and D.L. Blank, "Mechanisms of Incorporation of Drugs into Hair and the Interpretation of Hair Analysis Data", In: E.J. Cone, M.J. Welch, and M.B. Grigson Babecki, eds., *Hair Testing for Drugs of Abuse: International Workshop on Standards and Technology*, National Institutes of Health Publ. #95-3727, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 1995, pp. 19-90. (refereed book chapter)
24. D.L. Blank and D.A. Kidwell, "Decontamination Procedures for Drugs of Abuse in Hair. Are They Sufficient?", *Forensic Science International*, **70** (1995) 13-38.
25. D.A. Kidwell and D.L. Blank, "Drugs in Hair: How Do They Get There?", In: Cone, E.J., ed. *Proceedings of the 2nd International Conference on Hair Testing for Drugs of Abuse*. National Institute on Drug Abuse Research. DHHS Pub. No. Washington, DC: Supt. Docs., U.S. Govt. Print. Off., in press. (refereed book chapter)
26. F.P. Smith and D.A. Kidwell, "Cocaine in hair, saliva, skin swabs, and urine of cocaine users' children", *Forensic Science International*, **83** (1996) 179-189.
27. D.A. Kidwell, M.A. Blanco, and F.P. Smith, "Cocaine detection in a university population by hair analysis and skin swab testing", *Forensic Science International*, **84** (1997) 75-86.

28. D.A. Kidwell, J.C. Holland, and S. Athanaselis, "Testing for drugs of abuse in saliva and sweat", *Journal of Chromatography B: Biomedical sciences and applications*, **713** (1998) 111-135. (Invited Review)
29. D.A. Kidwell, E.H. Lee, and S. F. DeLauder, "Evidence for bias in hair testing and procedures to correct bias", *Forensic Science International*, **107** (2000) 93-104.
30. S.F. DeLauder and D.A. Kidwell, "The incorporation of dyes into hair as a model for drug binding", *Forensic Science International*, **107** (2000) 39-61.
31. F.P. Smith and D.A. Kidwell, "Accreditation of forensic laboratories", *Encyclopedia of Forensic Sciences*, Academic Press Ltd., London, UK, August 2000, pp. 58-64, (Refereed Book Chapter).
32. D.A. Kidwell and F.P. Smith, "Minimal standards for the performance and interpretation of toxicology test in legal proceedings", *J. Forensic Sciences*, **45** (2000) 237-9.
33. D.A. Kidwell and F.P. Smith, "Susceptibility of PharmChek™ drugs of abuse patch to environmental contamination", *Forensic Science International*, **116** (2001) 89-106.
34. F.P. Smith, D.A. Kidwell, J.D. Kidwell, F. Shinohara, C. Harper, K. Roarty, K. Bernadt, and R.A. McCaulley "Comparison of daily saliva, urine, sweat, and skin wipes among cocaine users", Published abstract, *Annales de Toxicologie Analytique* **14** (2002) 196.
35. D.A. Kidwell, J.D. Kidwell, F. Shinohara, C. Harper, K. Roarty, K. Bernadt, R.A. McCaulley, and F.P. Smith, "Comparison of daily urine, sweat, and skin wipes among cocaine users", *Forensic Science International*, **133** (2003) 63-78.
36. D.A. Kidwell and L.A. Riggs, "Comparing two analytical methods: minimal standards in forensic toxicology derived from information theory", *Forensic Science International*, **145** (2004) 85-96.
37. Xiaoxi Wu, B.J. Van Wie, and D.A. Kidwell, "An enzyme electrode for amperometric measurement of *D*-amino acid", *Biosensors and Bioelectronics*, **20** (2004) 879-886.
38. Xiaoxi Wu, C.J. Detzel, B. J. Van Wie, S.J. Haarsma, and D.A. Kidwell, "Model Based Optimization of Carbon Paste Enzyme Electrode", *Biotechnology and Bioengineering*, **88** (2004) 204-213.
39. M.A. Plesha, B.J. Van Wie, J.M. Mullin, D.A. Kidwell, "Measuring Quaternary Ammonium Cleaning Agents with Ion Selective Electrodes", *Analytica Chimica Acta*, **570** (2006) 186-194.
40. J.C. Owirutsky, M.B. Pomfret, D.J. Barton, and D.A. Kidwell, "Fourier transform infrared spectroscopy of azide and cyanate ion pairs in AOT reverse micelles", *J. Chem. Phys.*, **129** (2008) 024513, Approval # 08-1226-1046.
41. P.E. Pehrsson, J. Yang, W. Zhao, and D.A. Kidwell, "Atomic Force Microscopy of DNA-

Treated Single Wall Carbon Nanotubes”, Submitted, Approval #07-1226-3445

42. B. Liu, D. Rieck, B.J. Van Wie, G.J. Cheng, D.F. Moffett, and D.A. Kidwell, “Bilayer Lipid Membrane (BLM) Based Ion Selective Electrodes at the Meso, Micro, and Nano Scales”, *Biosensors & Bioelectronics*, **24** (2009)1843.
43. M.B. Pomfret, D.A. Steinhurst, D.A. Kidwell, and J.C. Owrutsky, “Thermal imaging of solid oxide fuel cell anode processes”, *J. Power Sources*, **195** (2010) 257-262.
44. D.A. Kidwell, M.A. Imam, and D.D. Dominguez, “Fabrication, Characterization, and Evaluation of Excess Heat in Zirconium-Nickel-Palladium Alloys,” *Journal of Condensed Matter Nuclear Science*, in press, Approval #11-1226-4344.
45. D.D. Dominguez, D.A. Kidwell, D.L. Knies, J.H. He, K.S. Grabowski, G.K. Hubler, and V. Violante, “Are Oxide Interfaces Necessary in Fleischmann-Pons-type Experiments?” *J. Condensed Matter Nucl. Sci.*, **8** (2012) 219-230.
46. D.A. Kidwell, M.A. Imam, and D.D. Dominguez, “Fabrication, Characterization, and Evaluation of Excess Heat in Zirconium-Nickel-Palladium Alloys”, *J. Condensed Matter Nucl. Sci.*, **8** (2012) 208-218.
47. J.H. He, L.F. DeChiaro, D.L. Knies, G.K. Hubler, K.S. Grabowski, A.E. Moser, D.D. Dominguez, D.A. Kidwell, and P.L. Hagelstein, “Stability of a Hydrogen Molecule in a Vacancy of Palladium Hydrides”, *International J. Hydrogen Energy*, **37** (2012)12351-12357.
48. O. Zaluzhna, D.A. Kidwell, and A. Epshteyn, “The Atomic Metron – a basis for synthesis of sub-nanometer particles with a discrete number of atoms”, MRS Online Proceedings Library, Volume 1548, DOI: <http://dx.doi.org/10.1557/opl.2013.697>
49. D.D. Dominguez, D.A. Kidwell, K.S. Grabowski, D.L. Knies, A.E. Moser and J.H. He, “Evidence for Excess Energy in Fleischmann–Pons-Type Electrochemical Experiments”, *J. Condensed Matter Nucl. Sci.*, **14** (2014) 15-28.
50. D.A. Kidwell, D.D. Dominguez, K.S. Grabowski, and L.F. DeChiaro, Jr, “Observation of radio frequency emissions from electrochemical loading experiments”, *Current Science Special Section: Low Energy Nuclear Reactions*, **108** (2015) 578-581.
51. D.A. Kidwell, F.P. Smith, and A.R. Shepherd, "Ethnic Hair-Care Products may increase False Drug Positives in hair", *Forensic Sciences International* **257** (2015) 160-164, (14-1231-3484).
52. D.A. Kidwell, F.P. Smith, "Companies should test the limits of their decontamination procedures—Reply to: Comments on “Ethnic hair care products may increase false positive in hair” V. Hill et al.", *Forensic Science International*, Volume 259, February 2016, Pages e48-e50.
53. K.E. Whitener, Jr., Woo-Kyung Lee, R. Stine, C. Tamanaha, D. A. Kidwell, J.T. Robinson, P.E. Sheehan, "Chemical Dehydrogenation and Enhanced Reactivity of

Hydrogenated Graphene" *Rsc Advances* **6**, 93356-93362 (2016). (16-1231-2196)

54. D.A. Kidwell, W-K Lee, K. Perkins, K.M. Gilpin, T.J. O'Shaughnessy, J.T. Robinson, P.E. Sheehan, and S.P. Mulvaney, "Chemistries for Making Additive Nanolithography in OrmoComp® Permissive for Cell Adhesion and Growth", *ACS Applied Materials & Interfaces* **11** (2019) 19793-19798. <http://dx.doi.org/10.1021/acsami.9b04096>
55. S.P. Mulvaney, D.A. Kidwell, J.N. Lanese, R.P. Lopez, M.E. Sumera, and E. Wei, "Catalytic Lateral Flow Immunoassays (cLFIA™): Amplified Signal in the Same Simple Format", submitted

### C. Patents and Invention Disclosures

1. D.A. Kidwell, "Selective detection of species in complex matrices by chemical derivatization and secondary ion mass spectrometry", U.S. Patent #4,902,627 issued February 20, 1990.
2. D.A. Kidwell, "Enzymatic assays using superabsorbent materials", U.S. Patent #5,196,302, issued on March 23, 1993.
3. D.A. Kidwell, "Replacements for hydrogen peroxide for use with horseradish peroxidase in immunoassays", Navy case #71,079 on 29 February 1988.
4. D.A. Kidwell, "Microassay on a Card", U.S. Patent #5,200,321 issued on April 6, 1993.
5. D.A. Kidwell, "Light emission or absorbance-based binding assays, U.S. Patent #5,314,802 issued on May 24, 1994.
6. D.A. Kidwell, "PORSCHA - A novel homogeneous assay for antigens and DNA", U.S. Patent #5,332,659 issued on July 26, 1994.
7. D.A. Kidwell, "Microassay on a Card", U.S. Patent #5,369,007 issued on November 29, 1994 a continuation in part of U.S. Patent #5,200,321.
8. R.J. Colton and D.A. Kidwell, "Sensor for single molecule recognition", U.S. Patent #5,372,930 issued December 12, 1994.
9. D.A. Kidwell and S.M. Conyers, "Catalytic particles as replacements for enzymes in immunoassays and DNA Assays", U.S. Patent #5,384,265 issued January 24, 1995.
10. D.A. Kidwell, "Surfactant-enhanced light emission or absorbance-based binding assays for polynucleic acids, U.S. Patent #5,466,578 issued November 14, 1995.
11. D.A. Kidwell and S.M. Conyers, "Biomolecules bound to polymer or copolymer coated catalytic inorganic particles, immunoassays using the same and kits containing the same", U.S. Patent #5,637,508 issued June 10, 1997.
12. G.U. Lee, D.A. Kidwell, and R.J. Colton; "Chemical and biological sensor using an ultra-



sensitive force transducer”, U.S. Patent #5,807,758 issued September 15, 1998.

13. D.A. Kidwell, R. Kern, G. Richards, and F. Mintz, “Real-time Biochemical Assay Telemetry System”, U.S. Patent #5,891,649 issued April 6, 1999.
14. D.A. Kidwell, “Sweat collecting device and methods for use and detection of tampering”, U.S. Patent #6,443,892 issued September 3, 2002.
15. D.A. Kidwell, “Use of ion selective electrodes for illicit drug analysis in saliva and surface wipes”, U.S. Patent # 6,780,307 issued August 24, 2004.
16. D.A. Kidwell, “Cast membrane reference electrode and method of making”, U.S. Patent #7,618,523 issued November 17, 2009.
17. D.A. Kidwell, “Non-Invasive Method for Monitoring Drug Use”, disclosed February 4, 2003, Navy case #84,562.
18. D.A. Kidwell, “Live/Dead BioAssays for Ultra-Sensitive, Continuous Detection”, disclosed April 8, 2003, Navy case #84,687.
19. D.A. Kidwell, “Multiparameter System for Environmental Monitoring”, U.S. Patent #8,440,062 issued on May 13, 2013.
20. Richard F. Hubbard, Arne W. Fliflet, Jeffrey H. Bowles, David A. Kidwell, Melissa K. Hornstein, Geoffrey B. Smith, and David Lewis, III., “Long Range Active Thermal Imaging System and Method”, U.S. Patent #7,795,583 issued on September 14, 2010.
21. D.A. Kidwell, “Fluidized Bed Detector for Continuous, Ultra-Sensitive Detection of Biological and Chemical Materials”, U.S. Patent #8,637,270 issued on January 28, 2014
22. D.A. Kidwell and A. Epshteyn, “Metal nanoparticles with a pre-selected number of atoms”, U.S. Patent #8,728,197, Issued May 20, 2014.
23. D.A. Kidwell, “Excess Enthalpy upon Pressurization of Nanosized Metals with Deuterium”, Navy Case #100,128, Security approval as #10-1226-3657. U.S. Patent #9,182,365, Issued November 10, 2015.
24. D.A. Kidwell, “Excess Enthalpy upon Pressurization of Nanosized Metals with Hydrogen or Deuterium”, as Navy Case #100,128. U.S. Patent #9,182,918, Issued November 24, 2015.
25. D.A. Kidwell, “Preparation of Novel Transmission Electron Microscopy Supports”, as Navy Case #103,603, U.S. Patent #9,646,803, Issued May 9, 2017.
26. D.A. Kidwell, “Catalytic Particles for Increased Sensitivity in Lateral Flow Immunoassays” Navy Case #104,002. Provisional patent filed as 62/305877 on March 9, 2016.
27. D.A. Kidwell, “Reagents for Reaction with Catalytic Particles for Increased Sensitivity in Lateral Flow Immunoassays”, Navy Case #108,691-US1; Provisional Patent filed on May 4,



2018.

28. D.A. Kidwell and S.P. Mulvaney, "Reagents for Reaction with Catalytic Particles for Increased Sensitivity in Lateral Flow Immunoassays", Navy Case #108,691-US1; Provisional Patent filed on May 2, 2019.
29. D.A. Kidwell and Thomas J. O'Shaughnessy, "Chemistries for Making Additive, Nanolithography in OrmoComp® Permissive for Cell Adhesion and Growth", NC# 110685, Provisional Patent filed on April 30, 2019.
30. D.A. Kidwell, "Delay Method to Provide Timed Chemistry to Lateral-Flow Immunoassays", Navy Case #113014, Provisional Patent filed on August 21, 2020.

#### **D. Papers Presented at Professional Society Meetings**

1. "Sequencing of Peptides by SIMS from the C- or N-Terminus", D.A. Kidwell, M.M. Ross and R.J. Colton, Fourth International Meeting on Secondary Ion Mass Spectrometry, Osaka, Japan, November 1983.
2. "Sequencing of Biological Molecules by SIMS", D.A. Kidwell, M.M. Ross and R.J. Colton, Texas Symposium on Particle-Induced Desorption, May 1984.
3. "Selective Detection of Mixture Components by SIMS", M.M. Ross, D.A. Kidwell, and R.J. Colton, 32<sup>nd</sup> Annual Conference on Mass Spectrometry and Applied Topics, San Antonio, TX, May 1984.
4. "Sequencing of Biological Molecules by SIMS", D.A. Kidwell, M.M. Ross, and R.J. Colton, 32<sup>nd</sup> Annual Conference on Mass Spectrometry and Allied Topics, San Antonio, TX, May 1984.
5. "Trends in Secondary Ion Emission from Quaternary Salts", D.A. Kidwell, M.M. Ross and R.J. Colton, 32<sup>nd</sup> Annual Conference on Mass Spectrometry and Allied Topics, San Antonio, TX, May 1984.
6. "Sequencing of Biological Molecules by Secondary Ion Mass Spectrometry", D.A. Kidwell, M.M. Ross and R.J. Colton, International Symposium on Mass Spectrometry in the Health and Life Sciences, San Francisco, CA, September 1984.
7. "Analysis of Impregnated Charcoals by Desorption Ionization Mass Spectrometry", M.M. Ross, D.A. Kidwell, and J.E. Campana, 27<sup>th</sup> ORNL-DOE Conference on Analytical Chemistry in Energy Technology, Knoxville, TN, October 1984.
8. "Use of Ion Formation Mechanisms in Optimization of Ion Production in SIMS", D.A. Kidwell, M.M. Ross and R.J. Colton, 33<sup>rd</sup> Annual Conference on Mass Spectrometry and Allied Topics, San Diego, CA, May 1984.
9. "Characteristics of Ion Emission in Desorption Ionization Mass Spectrometry", M.M. Ross, D.A. Kidwell and R.J. Colton, 33<sup>rd</sup> Annual Conference on Mass Spectrometry and

Allied Topics, San Diego, CA, May 1984.

10. "Use of Ion Formation Mechanisms to Optimize Ion Production in SIMS", D.A. Kidwell, M.M. Ross and R.J. Colton, Tenth International Mass Spectrometry Conference, Swansea, U.K., 9-14 September 1985.
11. "Increasing Secondary Ion Yields - Derivatization/SIMS", D.A. Kidwell, M.M. Ross and R.J. Colton, Ion Formation from Organic Solids III, Munster, Germany, 9-14 September 1985.
12. "Detection of Biomolecules by Derivatization/SIMS", D.A. Kidwell, M.M. Ross and R.J. Colton, Fifth International Conference on Secondary Ion Mass Spectrometry, Washington, DC, 29 Sept.-4 Oct. 1985.
13. "Analysis of Drugs in Human Urine by Derivatization/SIMS", D.A. Kidwell, M.M. Ross and R.J. Colton, American Society for Mass Spectrometry Conference, San Diego, CA, 27-31 May 1985.
14. "Characteristics of Ion Emission in Desorption Ionization Mass Spectrometry", M.M. Ross, D.A. Kidwell, R.J. Colton and J.E. Campana, 33<sup>rd</sup> Annual Conference on Mass Spectrometry and Allied Topics, San Diego, CA, 26-31 May 1985; 5th International Conference on Secondary Ion Mass Spectrometry, Wash. DC, 29 Sept.-4 Oct. 1985.
15. "Aspects and Applications of Derivatization/SIMS", M.M. Ross, D.A. Kidwell, R.J. Colton and J.E. Campana, 3<sup>rd</sup> Workshop on Ion Formation from Organic Solids, Munster, Germany, 17-19 September 1985.
16. "Analysis by SIMS and ESCA of Biomolecules Attached to Surfaces", D.A. Kidwell, and R.J. Colton, American Society for Mass Spectrometry and Allied Topics, Cincinnati, OH, 13 June 1986.
17. "The Formation of Ions in Thermospray Liquid Chromatography Mass Spectrometry", D. Kidwell, J.H. Callahan and M.M. Ross, American Society for Mass Spectrometry Conference, Denver, CO, 24-29 May 1987.
18. "Analysis of Drugs of Abuse in Hair by Tandem Mass Spectrometry", D.A. Kidwell, American Society for Mass Spectrometry Conference, San Francisco, CA, 6-10 June 1988.
19. "Technical Aspects of a Drug Screening Program", D.A. Kidwell, Compressed Gas Association, Inc., Cherry Hill, NJ, 13-October-1988.
20. "Implementing an Effective Drug testing Program", D.A. Kidwell, Compressed Gas Association, Inc., Cherry Hill, NJ, 13-October-1988.
21. "Matching the Choice of Drug Test to Different Issues and Operational Situations", D.A. Kidwell, American Association of Forensic Scientists, Chicago, IL,
22. "Screening of Hair for Drugs of Abuse - Is Passive Exposure a Complication", David L.

Blank and D.A. Kidwell, 41<sup>st</sup> Annual Meeting of the American Academy of Forensic Sciences, Las Vegas, NV, February 1989.

23. "Matching the Choice of Drug Test to Different Issues and Operational Situations", D.A. Kidwell, Whatworks: An International Perspective on Drug Abuse Treatment and Prevention Research, New York, NY, 22-25 October 1989.
24. "Detectability of Aminorex and 4-Methylaminorex in Urine by Immunoassay and Gas Chromatography/Mass Spectrometry (GC/MS)", Frederick P. Smith and D.A. Kidwell, American Academy of Forensic Sciences, Cincinnati, OH, February 1990.
25. "Isomeric Amphetamines: A Problem for Urinalysis", Frederick P. Smith and D.A. Kidwell, American Academy of Forensic Sciences, Cincinnati, OH, February 1990.
26. "Chromogenic Substrates for Horseradish Peroxidase", S.M. Conyers and D.A. Kidwell, 24<sup>th</sup> Middle Atlantic Regional Meeting, American Chemical Society, Florham Park/Madison, NJ, May 23-25, 1990.
27. "Deposition of Drugs of Abuse into Human Hair", D.A. Kidwell and D.L. Blank, Society of Forensic Toxicology Conference on Hair Analysis, Washington, DC, May 26, 1990.
28. "Caveats in Testing for Drugs of Abuse", D.A. Kidwell, National Institute on Drug Abuse conference on Methodological Issues in Epidemiological, Prevention and Treatment Research on the Effects of Prenatal Drug Exposure in Women and Children, July 25-26, 1990.
29. "Hair Analysis: Techniques and Potential Problems", D.A. Kidwell and D.L. Blank, in Recent Developments in Therapeutic Drug Monitoring and Clinical Toxicology, Barcelona, Spain, 1991.
30. "4-Methylaminorex Stereoisomers: Synthesis, Immunological Detectability, and GC/MS Identification in Urine", S.J. Sudmeier, F.P. Smith, D.A. Kidwell, D.R. Phillips, J.P. Bowen, and S.A. Reuschel, Twenty-First Annual Symposium on Advances in Applied Analytical Chemistry, Louisiana Section, American Chemical Society, New Orleans, May 22-23, 1991.
31. "Analysis for Drugs of Abuse", D.A. Kidwell, invited talk at University of Alabama at Birmingham, November 7, 1991.
32. "The Microassay on a Card - A Rugged, Portable Immunoassay", D.A. Kidwell, Technology 2001, San Jose, CA, December 3-5, 1991.
33. "Four Isomers of 4-Methylaminorex in Urine Examined by Immunoassay and GC/MS", S.J. Sudmeier, F.P. Smith, S.A. Reuschel and D.A. Kidwell, American Academy of Forensic Sciences, Inc. 1992 Annual Meeting.
34. "External Contamination of Hair by Drugs of Abuse: A Problem Looming for Forensic Analysis", D.L. Blank and D.A. Kidwell, 1<sup>st</sup> International Meeting "Hair Analysis as A Diagnostic Tool for Drugs of Abuse Investigation", Genoa, Italy, December 10-11, 1992.

**(invited talk)**

35. "Analysis of Drugs of Abuse in Hair by Tandem Mass Spectrometry", D.A. Kidwell, 1<sup>st</sup> International Meeting on Hair Analysis as A Diagnostic Tool for Drugs of Abuse Investigation, Genoa, Italy, December 10-11, 1992. **(invited talk)**
36. "PORSCHA - A Novel, Homogeneous Assay for Antigens", D.A. Kidwell, SPIE Biomedical Optics '93, Paper 1885-06, Los Angeles, CA, January 16-22, 1993.
37. "Hair Analysis: Issues and Data Interpretation", D.L. Blank and D.A. Kidwell, Tri-Services Meeting, Salt Lake City, UT, June 15-18, 1993. **(invited talk)**
38. "Incorporation of Drugs into Hair and Analysis of Drugs by Tandem Mass Spectrometry", D.A. Kidwell, Tri-Services Meeting, Salt Lake City, UT, June 15-18, 1993. **(invited talk)**
39. "Hair Analysis for Drugs of Abuse: Decontamination Procedures Revisited", D.L. Blank and D.A. Kidwell, Paper K26, 46th Annual meeting of the American Academy of Forensic Sciences, Feb 14-19, 1994, San Antonio, TX.
40. "Mechanisms for Incorporation of Drugs of Abuse in Hair", D.A. Kidwell, S.F. DeLauder, and D.L. Blank, Paper K27, 46th Annual meeting of the American Academy of Forensic Sciences, Feb 14-19, 1994, San Antonio, TX.
41. "Typing of DNA from Human Urine", D.A. Kidwell and F.P. Smith, Paper K35, 46<sup>th</sup> Annual meeting of the American Academy of Forensic Sciences, Feb 14-19, 1994, San Antonio, TX.
42. "Detection of DNA using Pi Overlapping Ring Systems Contained in a Homogeneous Assay", S.F. DeLauder and D.A. Kidwell, 28th Middle Atlantic Regional Meeting, May 25-27, 1994, Baltimore, MD.
43. "Decontamination Procedures: Are They Sufficient?", D.L. Blank and D.A. Kidwell, XVI Congress of the International Academy of Legal Medicine and Social Medicine, Strasbourg, France, May 31-June 2, 1994.
44. "Drugs in Hair: How Do They Get There?", D.A. Kidwell, S.F. DeLauder, and D.L. Blank, 2<sup>nd</sup> International Meeting on Clinical and Forensic Aspects of Hair Analysis, June 6-8, 1994, Genoa, Italy.
45. "Children of Cocaine Users Show Passive Drug Incorporation in Their Hair", F.P. Smith, D.A. Kidwell, and L.F. Cook, 2nd International Meeting on Clinical and Forensic Aspects of Hair Analysis, June 6-8, 1994, Genoa, Italy.
46. "Lucy in the Sky with Diamonds. How can we see her?", T. Colley and D.A. Kidwell, California Association of Toxicologists, August 6, 1994, Monterey, CA.
47. "Incorporation of Drugs of Abuse Into and Their Removal from Hair", D.A. Kidwell and D.L. Blank, Joint TIAF and Society of Forensic Toxicologists Meeting, Tampa, FL, October 29-30, 1994. (invited talk)

48. "Incorporation of Drugs of Abuse Into and Their Removal from Hair", D.A. Kidwell, NIDA workshop, Washington, DC, September 8, 1994. (invited talk)
49. "PORSCHA - A Novel, Homogeneous Assay for the Detection of DNA/RNA", D.A. Kidwell, Advances in Fluorescence Sensing technology II, San Jose, CA, February 6-8, 1995.
50. "Sensor Development at the Naval Research Laboratory", D.A. Kidwell, Pacific Northwest Laboratory, February 11, 1995.
51. "Incorporation of Drugs of Abuse Into and Their Removal from Hair", D.A. Kidwell, American Academy of Forensic Sciences, Seattle, WA, February 13-18, 1995 (**invited talk**).
52. "PORSCHA - A Novel, Homogeneous Assay for the Detection of DNA/RNA", D.A. Kidwell, Nucleic Acid-Based Technologies: Current Challenges, Future Strategies, and End User perspectives, San Francisco, CA, May 31-June 2, 1995.
53. "The Alternative Matrix Program for Drug Abuse Detection and Deterrence", D.A. Kidwell, International Workshop on Drug Abuse Treatment Technology, Baltimore, MD, Aug. 16-17, 1995.
54. "What Does Hair Analysis for Drugs of Abuse Measure?", D.A. Kidwell and F.P. Smith, Midwestern Association of Forensic Scientists and Southern Association of Forensic Scientists, Paducah KY, Oct. 15-20, 1995 (PAPER AWARD WINNER).
55. "Hair Analysis for Cocaine: Family Studies Comparing Children and Adults", F.P. Smith and D.A. Kidwell, Midwestern Association of Forensic Scientists and Southern Association of Forensic Scientists, Paducah KY, Oct. 15-20, 1995.
56. "Non-Invasive Testings Methods. Hair, Sweat, and Saliva as Alternatives to Urinalysis for Detering Drug Use", D.A. Kidwell and D.L. Blank, International Symposium for Counterdrug Law Enforcement: Applied Technology for Improved Operational Effectiveness, Nashua, NH Oct. 24-27, 1995.
57. "What does hair analysis for drugs of abuse measure?" D.A. Kidwell, J.C. Holland, and T. Colley, 1<sup>st</sup> European Meeting on Hair Analysis, Genoa, Italy, June 17-19, 1996.
58. "Hair sweat, and saliva analysis as a measure of cocaine use" D.A. Kidwell and M.A. Blanco, 1<sup>st</sup> European Meeting on Hair Analysis, Genoa, Italy, June 17-19, 1996.
59. "What does hair analysis for drugs of abuse measure? Comparing hair and sweat for detection of cocaine use" D.A. Kidwell, M.A. Blanco, and F.P. Smith, 14<sup>th</sup> Meeting of the International Association of Forensic Sciences, August 26-30, 1996, Tokyo, Japan.
60. "Hair analysis for the detection of cocaine, the pitfalls of DNA typing of urine, and the use of sweat as an alternative detection media" D.A. Kidwell, Annual Triservices Meeting, Honolulu, HI, November 4-8, 1996.

61. "Novel Assays Being Developed at NRL", D.A. Kidwell, Abbott Laboratories, Abbott Park, IL, March 4, 1997.
62. "PORSCHA - A Novel, Homogeneous Assay for DNA/RNA" D.A. Kidwell, IBC 3<sup>rd</sup> Annual Conference on Biochip Arrays, San Diego, CA, March 5-6, 1997.
63. "Environmental contamination and cocaine hair test", F. Smith and D.A. Kidwell, 2<sup>nd</sup> Joint Meeting of the Forensic Science Society and California Association of Criminalists, N. Yorkshire, England, 9-12 July 1997.
64. "Monitoring drug use", D.A. Kidwell, J.C. Holland, and M.A. Blanco, ONDCP meeting, Chicago, IL, August 19-21, 1997.
65. "Monitoring drug use", D.A. Kidwell, J.C. Holland, and M.A. Blanco, XXXV Annual TIAFT meeting, Padova, Italy, August 24-28, 1997.
66. "Environmental contamination causes positive hair analysis results", F.P. Smith and D.A. Kidwell, XXXV Annual TIAFT meeting, Padova, Italy, August 24-28, 1997.
67. "Monitoring and deterring drug use", D.A. Kidwell, Symposium on: "Analytical Chemistry Now and Into the New Millennium: Interfacing with Molecular Biology" at the University of North Carolina Greensboro, Greensboro, NC, May 1, 1998. **(invited talk)**
68. "Monitoring and deterring drug use", D.A. Kidwell, National Workshop on Controlling Illegal Drugs in Correctional Institutions, Quantico, VA, May 27-29, 1998. **(invited talk)**
69. "Testing for illicit drugs in sweat and saliva", D.A. Kidwell, Marsha A. Blanco, and Janel C. Holland, Joint SOFT/TIAFT, Albuquerque, NM, October 4-10, 1998.
70. "Testing for illicit drugs in sweat and saliva", D.A. Kidwell, Marsha A. Blanco, and Janel C. Holland, Annual Triservices Meeting, Columbia, MD, November 3-5, 1998.
71. "Is hair testing culturally biased and why is this a concern in the U.S.?", D. A. Kidwell, 2<sup>nd</sup> European Conference on Hair Testing, Martigny, Switzerland, June 14-16, 1999.
72. "Detecting drugs of abuse in diverse matrices", D.A. Kidwell, Madison-Chicago-Milwaukee Mass Spectrometry Discussion Group, Great Lakes, IL, May 18, 1999. **(invited talk)**
73. "Testing the best technology to detect and deter drug use", DoD Counter Drug Technology Review, Arlington, VA, June 1-2, 1999. **(invited talk)**
74. "Detecting drugs of abuse in diverse matrices", D.A. Kidwell, Worldwide Air Force Alcohol and Drug Abuse Prevention and Treatment/Demand Reduction Conference, June 21-25, 1999, Reno, NV. **(invited talk)**
75. "Testing for illicit drugs via sweat and saliva analysis: application to the detection of body packers", D.A. Kidwell and William P. Gardner, 1999 ONDCP International



Technology Symposium, March 8-10, 1999, Washington, DC.

76. "Diffusion studies of charged dyes into human hair as a model for drug incorporation", Marcus Moye, Sandra F. DeLauder, and D.A. Kidwell, Association for the Professional Advancement of Black Chemists and Chemical Engineers Conference, April, 1999, San Diego, CA.
77. "Testing for illicit drugs via sweat and saliva analysis: application to the detection of body packers", D.A. Kidwell and William P. Gardner, 1999 Gordon Conference on Illicit Substance Detection, Salva Regina University, August 8-12, 1999, New Port, RI. (invited talk)
78. "Testing for illicit drugs in sweat and saliva", D.A. Kidwell, Marsha A. Blanco, and Janel C. Holland, 1999 Gordon Conference on Illicit Substance Detection, Salva Regina University, August 8-12, 1999, New Port, RI. **(invited poster)**
79. "Testing for Illicit Drugs in Sweat and Saliva", D.A. Kidwell, Marsha A. Blanco, and Janel C. Holland, Annual Triservices Meeting, Jacksonville, FL, October, 25, 1999.
80. "Testing for Illicit Drugs via Sweat and Saliva Analysis: Application to the Detection of Body Packers", D.A. Kidwell and William P. Gardner, Border Research Council, November 10, 1999, Albuquerque, NM. **(invited talk)**
81. "Minimal standards in forensic toxicology derived from information theory", Frederick P. Smith and D.A. Kidwell, American Academy of Forensic Sciences, Reno, NV, February 21-25, 2000.
82. "Evaluating the PharmChek™ Sweat Patch", Frederick P. Smith and D.A. Kidwell, American Academy of Forensic Sciences, Reno, NV, February 21-25, 2000.
83. "Alternative Matrices for Drug Testing", D.A. Kidwell, DoD Counter Drug Technology Review, Arlington, VA, June 26, 2000. **(invited talk)**
84. "The Effects of Contamination on Sweat Patch Results", Frederick P. Smith and D.A. Kidwell, National Law Enforcement Conference, Dallas, TX, May 21-22, 2001.
85. "A Fieldable, Saliva-Testing System for Drugs Of Abuse", D.A. Kidwell and Bernard J. Van Wie, National Law Enforcement Conference, Dallas, TX, May 21-22, 2001.
86. "A Fieldable, Saliva-Testing System for Drugs Of Abuse", D.A. Kidwell and Bernard J. Van Wie, ONDCP 2001, San Diego, CA, June 27, 2001.
87. "Susceptibility of PharmChek™ Drugs of Abuse Patch to False Positives from Environmental Contamination", D.A. Kidwell, Melissa J. Long, and Frederick P. Smith, ONDCP 2001, San Diego, CA, June 27, 2001.
88. "A Rapid, Reusable, Saliva-Based System for Drugs of Abuse Testing", Bernard J. Van Wie and D.A. Kidwell, 7<sup>th</sup> International Congress of Therapeutic Drug monitoring and Clinical Toxicology, Washington, DC., September 4, 2001.



89. "Susceptibility of PharmChek™ Drugs of Abuse Patch to False Positives from Environmental Contamination", Melissa J. Long and D.A. Kidwell, 7<sup>th</sup> International Congress of Therapeutic Drug monitoring and Clinical Toxicology, Washington, DC, September 4, 2001.
90. "Detecting Drug Use via Hair and Sweat Testing", D.A. Kidwell, Worldwide Air Force Alcohol and Drug Abuse Prevention and Treatment/Demand Reduction Conference, Orlando, FL, July 16, 2001. **(Invited Talk)**
91. "Workplace Drug Testing", D.A. Kidwell, Workshop on Application and Acceptance of Hair Testing on Drugs held at the 7<sup>th</sup> International Congress of Therapeutic Drug monitoring and Clinical Toxicology, Washington, DC, September 24, 2001. **(Invited Talk)**
92. "Determining the Best Matrix (Hair, Sweat, Saliva, or Urine) to Monitor Drug Use", D.A. Kidwell, J.D. Kidwell, F.H. Shinohara, F.P. Smith, C. Harper, K. Roarty, K. Bernadt, and R.A. McCaulley, DoD CounterDrug Technical Agent Symposium, May 30, 2002.
93. "Hand-held, Ion-Selective Electrode Array for Drugs of Abuse: Application to Cocaine Detection in Saliva and on Surfaces", D.A. Kidwell, Lesley A. Riggs, and Matthew C. Kinney, Gordon research Conference on Illicit Substance Detection, Queens College, UK, July 10-13, 2002.
94. "Reducing false positives from environmental contamination and increasing drug detection in the PharmChek™ Sweat Patch", D.A. Kidwell and Melissa J. Long, 40<sup>th</sup> Annual TIAFT meeting, Paris, France, August 26-30, 2002.
95. "Comparison of daily saliva, urine, sweat, and skin wipes, among cocaine users", Smith FP, Kidwell DA, Kidwell JD, Shinohara F, Harper C, Roarty K, Bernadt K, McCaulley RA, 40<sup>th</sup> Annual TIAFT meeting, Paris, France, August 26-30, 2002.
96. "A Miniature, Multi-Analyte Sensing System for Continuous Water Quality Monitoring", D.A. Kidwell, Jim M. Mullin, Xiaoxi Wu, Bernard J. Van Wie, and Mike A. Plesha, SERDP Partners in Environmental Technology Technical Symposium and Workshop, December 3-5, 2002, Washington, DC.
97. "Detection of Drug Use through Hair and Sweat Testing: Practices and Pitfalls", D.A. Kidwell, Northeast Technology Product and Assessment Conference, Sturbridge, MA, February 21, 2003. **(Invited talk)**
98. "Testing for Driving Under the Influence of Drugs: Setting Impairment Levels", D.A. Kidwell and Lesley A. Riggs, ONDCP 2003 International Technology Symposium, San Diego, CA, July 9, 2003.
99. "Detection of Drug Use Through Hair and Sweat Testing: Advantages and Pitfalls", D.A. Kidwell, University of Puerto Rico, San Juan PR, September 29, 2003. **(Invited talk)**
100. "Minimal Standards for Instrumental Analysis Derived from Information Theory", D.A. Kidwell, 3<sup>rd</sup> European Conference on Hair Analysis, Crete, October 6-8, 2003.

101. "Integrating Process Monitoring into A Novel Continuous Centrifugal Bioreactor", B.J. Van Wie, D.J. Mason, C.J. Detzel, W.C. Davis, B. Schmuck, and D.A. Kidwell, American Chemical Society Meeting, Anaheim, CA, March 28, 2004.
102. "A Miniature, Multi-Analyte, Sensing System for Water Quality Monitoring", D.A. Kidwell, Sensors Expo & Conference 2004, Detroit, MI, June 9-10, 2004 (invited talk).
103. "A Miniature, Multi-Analyte, Sensing System for Water Quality Monitoring", D.A. Kidwell, EcoLab, Minneapolis, MN, June 23, 2004. **(invited talk)**
104. S.L. Rose-Pehrsson, K.P. Parker, and D.A. Kidwell, "Diffusion Badges as a Long-Term, Low-Level Method of Ambient Air Analysis", 2005 NEHC Conference, Virginia Beach, VA, February 12-18, 2005.
105. D.A. Kidwell, "A Miniature, Multi-Analyte, Sensing System for Water Quality Monitoring", Sensors Expo & Conference 2005, Chicago, IL, June 6-9, 2005. **(invited talk)**.
106. D.A. Kidwell, "Micro and Nano Sensor Research at the Naval Research Laboratory", University of Puerto Rico, April 24, 2006. **(invited talk)**.
107. D.A. Kidwell, "Use of Hair Testing in Air Force Drug Prosecutions", Armed Forces Institute of Pathology, May 3-5, 2006. **(invited talk)**.
108. D.A. Kidwell (presented by Fritzie Shinohara), "Considerations for Ultra-Trace Analysis", CMNS Workshop at NRL, October 25-28, 2006.
109. J. Yang, D.A. Kidwell, W. Zhao, and P.E. Pehrsson, "Atomic Force Microscopy of DNA-Treated, Single-Wall Carbon Nanotubes", Materials Research Society, Nov 28-Dec 2, 2006, Boston, MA. Approval #06-1226-3618.
110. D.A. Kidwell, C. Zhu, and M. Malito, "Concentration of Trace Water Contaminants from Large Volumes of Water with a Fluidized Bed", Poster presented at the 2007 Scientific Conference on Chemical and Biological Defense Research, Timonium MD, 13-15 Nov 2007. Approval #07-1226-3458.
111. F.P. Smith, D.A. Kidwell, F. Shinohara, and J.D. Kidwell, "Cocaine Testing of Drug Treatment Patients - Comparison of Urine, Sweat, Oral Fluid, Skin Wipes, and Hair", American Academy of Forensic Sciences 60th Annual Meeting, Washington, DC, February 2008.
112. F.P. Smith, D.A. Kidwell, and J.C. Baldwin, "Prevalence of Cocaine on Urban and Suburban Elementary Student Desks", American Academy of Forensic Sciences 60th Annual Meeting, Washington, DC, February 2008.
113. D.A. Kidwell, "Considerations for Ultra-Trace Analysis of Metals in a Palladium Matrix", Presented at the 14<sup>th</sup> International Conference on Condensed Matter Nuclear Science, Hyatt Regency, Washington, DC, August 10-15, 2008 **(invited talk)**. Approval #08-1226-2516.

114. J.C. Owrutsky, M.B. Pomfret, D.J. Barton, and D.A. Kidwell, "Fourier transform infrared spectroscopy of azide and cyanate ion pairs in AOT reverse micelles", 236th Amer. Chem. Soc., Philadelphia, PA, 20 August 2008.
115. S.J. Haarsma, B.J. Van Wie, D.F. Moffett, and D.A. Kidwell, "Biosensors Using Immunoaffinity Constructs for Detection of Noncharged Organic Species and Proteins", Micro Nano Breakthrough Conference, Vancouver, WA, Sept. 8-10, 2008.
116. D.A. Kidwell, "Continuous Concentration of Trace Materials from Large Volumes of Water with a Fluidized Bed", Presented at the DTRA/JSTO/CBDP Chemical and Biological Defense Physical Science and Technology (CBDP S&T) Conference, New Orleans, Louisiana, November, 17-21 2008. Approval #08-1226-2865.
117. M.B. Pomfret, D.A. Steinhurst, D.A. Kidwell, and J.C. Owrutsky, "Thermal imaging of solid oxide fuel cell anode processes" 215<sup>th</sup> ACS Meeting, San Francisco, CA, 26 May 2009.
118. David A. Kidwell, Allison E. Rogers, Kenneth Grabowski, and David Knies, "Does Gas Loading Produce Anomalous Heat?", 15<sup>th</sup> International Conference on Condensed Matter Nuclear Science, Rome, Italy October 5-9, 2009 Approval # 09-1226-3219.
119. David A. Kidwell, Kenneth Grabowski, Catalina Cetina, and Carmine Carosella, "Evaluation of the Claim of Transmutation of Cesium to Praseodymium with the MHI Structure – Part 2", 15th International Conference on Condensed Matter Nuclear Science, Rome, Italy October 5-9, 2009.
120. M.B. Pomfret, D.A. Steinhurst, D.A. Kidwell, and J.C. Owrutsky, "Near-Infrared Imaging of SOFCs with Methane and Propane Fuels", 216th ECS Meeting, Vienna, Austria October 26, 2009.
121. David A. Kidwell, David L. Knies, Kenneth S Grabowski, and Dawn D. Dominguez, "Yes, Virginia there is Heat, but it is Likely of Chemical Origin", ACS Spring 2010 National Meeting, San Francisco, CA, 21 March 2010.
122. David A. Kidwell, David L. Knies, Alex E. Moser, and Dawn D. Dominguez, "Yes, Virginia there is Heat, but it is Likely of Chemical Origin", 9<sup>th</sup> International Workshop on Anomalies in Hydrogen/Deuterium Loaded Metals, Certosa di Pontignano in Siena, Italy, 17-19 September 2010, Approval # 09-1226-3219 and Approval #10-1226-2561.
123. D.A. Kidwell, A.E. Moser, C.A. Klug, D.D. Dominguez, K.S. Grabowski, and D.L. Knies, "Is the Excess Heat from Gas Loading Consistent with D-H Exchange?", 16<sup>th</sup> International Conference on Condensed Matter Nuclear Science - Chennai, India, February 7-10, 2011. Approval #11-1226-0086.
124. M.A. Imam, J.H. He, D.D. Dominguez, and D.A. Kidwell, "Fabrication, Characterization, and Evaluation of Arata Style Alloys", 16th International Conference on Condensed Matter Nuclear Science - Chennai, India, February 7-10, 2011. Approval #11-1226-0361.

125. D.A. Kidwell, A.E. Moser, C.A. Klug, D.D. Dominguez, and D.L. Knies, "Do Kinetics and Thermodynamics Support D-H Exchange?", Materials issues in LENR Devices - Chariot Beach Resort Hotel, Mahabalipuram, India, February 12-13, 2011. Approval #11-1226-0085.
126. David L. Knies, David A. Kidwell, V. Violante, F.L. Tanzella, and E. Alvarez, Nuclear "Ash" and Particle Detection in Gas Loading Experiments", 16<sup>th</sup> International Conference on Condensed Matter Nuclear Science - Chennai, India, February 7-10, 2011. Approval #11-1226-00xx.
127. D.D. Dominguez, D.A. Kidwell, D.L. Knies, J.H. He, K.S. Grabowski and V. Violante, "Are Oxide Interfaces Necessary for FPE?", 16<sup>th</sup> International Conference on Condensed Matter Nuclear Science - Chennai, India, February 7-10, 2011. Approval #11-1226-0084.
128. D.A. Kidwell, A.E. Moser, M.A. Imam, D.D. Dominguez, and D.L. Knies, "Excess Heat from Gas Loading - Methodology and Pitfalls", Excess Heat Effects Seminar - University of Missouri, 6 October 2011.
129. D.L. Knies, K.S. Grabowski, G.K. Hubler, D.A. Kidwell, D.D. Dominguez, M.A. Imam, L.F. DeChiaro, J.H. He, A.E. Moser, and V. Violante, "LENR at NRL", Excess Heat Effects Seminar - University of Missouri, 6 October 2011.
130. D.A. Kidwell and A. Epshteyn, "The Atomic Metron", 2011 NanoTechnology for Defense, 24-27 October, Hyatt Regency Bellevue, Bellevue Washington.
131. D.D. Dominguez, L. DeChiaro, D.A. Kidwell, A. Moser, V. Violante, G.K. Hubler, S-F Cheng, J.H. He and D.L. Knies, "Anomalous Results in Fleischmann-Pons-type Electrochemical Experiments", 17<sup>th</sup> International Conference on Cold Fusion, Daejeon, Korea, 12-17 August 2012. [12-1231-2811]
132. D.A. Kidwell, "Gas Loading of Nanopalladium", 17th International Conference on Cold Fusion, Daejeon, Korea, 12-17 August 2012. [12-1231-2812]
133. Oksana Love, David A. Kidwell, and Albert Epshteyn, "The Atomic Metron – A basis for synthesis of sub-nanometer particles with a discrete number of atoms", Materials Research Society 2013 Spring Meeting, San Francisco, CA, April 2, 2013 [13-1231-0973]
134. Oksana Love, David A. Kidwell, and Albert Epshteyn, "The Atomic Metron: A basis for synthesis of sub-nanometer particles with known sizes and a discrete number of atoms", Spring 2013 New Orleans ACS National Meeting, April 7-11, 2013. [13-1231-0974]
135. D.A. Kidwell, D.D. Dominguez, K.S. Grabowski, D.L. Knies, A.E. Moser, C. Cetina, J.H. He, G.K. Hubler, and C.A. Carosella, INVITED– **Keynote Speech** - "Low Energy Nuclear Reaction Investigations at the Naval Research Laboratory", 18<sup>th</sup> International Conference on Cold Fusion, University of Missouri, Columbia, Missouri, July 22, 2013. [13-1231-1669]
136. Matthew R. Grochowski, Albert Epshteyn, and David A. Kidwell, "Synthesis of a DOTA-

PAMAM Atomic Metron Template", 248<sup>th</sup> ACS National Meeting Fall 2014, San Francisco, CA, August 10-14, 2014. [14-1231-2968]

137. Xuesong Li, C. Berkman, J. Geruntho, B. Van Wie, and D.A. Kidwell, "Novel Immunosensor: Dual Ionophore Concept Based on an Ion Selective Electrode", BMES 2014 Annual Meeting, San Antonio, TX, October 22-25, 2014.
138. D.A. Kidwell, D.D. Dominguez, K.S. Grabowski, L.F. DeChiaro, Jr., and D.L. Knies, "Observation of RF Emissions and Heat in Electrochemical Loading Experiments" 19<sup>th</sup> International Conference on Condensed Matter Nuclear Science - Padova, Italy, April 13-18, 2015.
139. D.A. Kidwell, C.A. Klug, and A.E. Moser, "Is the excess heat from gas loading consistent with D-H exchange rates?", 19<sup>th</sup> International Conference on Condensed Matter Nuclear Science - Padova, Italy, April 13-18, 2015.
140. K.E. Whitener, W.K. Lee, R. Stine, J.T. Robinson, D.A. Kidwell, C.R. Tamanaha, and P.E. Sheehan, "Preserving chemically modified graphene from thermal and chemical loss of functionality," 2017 254<sup>th</sup> ACS National Meeting, Washington, DC, 24 August 2017, [17-1231-2904].
141. Bernard J. Van Wie, Nehal I. Abu-Lail, Arda Gozen, William Davis, Juana Mendenhall, Mahmoud Amr, Alia Mallah, Arshan Nazempour, Chrystal Quisenberry, Christopher Detzel, Baran Arslan, David Kidwell, Gaber Abdellrazeq, and Mahmoud Elnaggar, "Biomimicry in a High Cell Population Density Perfusion Centrifugal Bioreactor", American Institute of Chemical Engineers, Oct. 29 – Nov. 3, 2017, Minneapolis, MN.
142. D.A. Kidwell, E. Wei, J. Wei, and S.P. Mulvaney, "Increasing Lateral Flow Immunoassay Sensitivity Using Catalytic Particles" poster presentation at Biosensors 2018 - 28<sup>th</sup> Anniversary World Congress on Biosensors, Miami, FL, June 12-15, 2018. [18-1231-1475]
143. K. Whitener, W.-K. Lee, R. Stine, J. Robinson, D. Kidwell, C. Tamanaha, P. Sheehan, "Preserving chemically modified graphene from thermal and chemical loss of functionality," SPIE Defense + Security, Ultrafast Bandgap Photonics III; Orlando, FL; April 16, 2018 [17-1231-2904] (**invited talk**)
144. Kidwell, D.A., Wei, E., Wei J., Mulvaney, S. P., "Increasing Lateral Flow Immunoassay Sensitivity Using Catalytic Particles" poster presentation at Molecular Med Tri-Con 2019, San Francisco, CA, March 10-14, 2019. [18-1231-1475]
145. D.A. Kidwell, Eric Wei, J.N. Lanese, and S.P. Mulvaney, "Catalytic Nanoparticles to Enhance the Sensitivity of Lateral Flow Immunoassays", Nanotech 2019 Conference and Exposition, Boston, MA, June 17, 2019.

#### **E. Memorandum Reports**

1. D.A. Kidwell, "Options to Distinguish Heroin and Poppy Seed Use"

2. D.A. Kidwell, "Analysis of Cocaine, Heroin and Their Metabolites in Saliva", NRL Memorandum Report 6678.
3. D.A. Kidwell and F.P. Smith, "Susceptibility of PharmChek™ Drugs of Abuse Patch to Environmental Contamination", NRL Memorandum Report 6170-99-8414, November 3, 1999.
4. Melissa Long and D.A. Kidwell, "Improving the PharmChek™ Sweat Patch: reducing false positives from environmental contamination and increasing drug detection", NRL Memorandum Report 6170-01-8597, December 19, 2001.
5. D.A. Kidwell, "Selecting the Best Drug-Testing Procedures", NRL Memorandum Report 6170-03-465, November 28, 2003.
6. D.A. Kidwell, "Measuring Copper in Seawater – An Automated Detection of Copper Binding Capacity Final Report of SERDP SEED 1266", NRL Memorandum Report 6170-03-8729, December 19, 2003.
7. K.P. Williams, S.L. Rose-Pehrsson, and D.A. Kidwell, "Submarine Atmosphere health Assessment Program (SAHAP) Validation Program: Assessment of Passive Badges for Long-term, Low-Level Air Monitoring on Submarines – Chamber Validation", September 2005.
8. J.C. Owrutsky, Gerald M. Sando, Alan D. Berry, David A. Kidwell, and Douglas J. Brown, "High Infrared Extinction of High Aspect Ratio Gold Nanorods", NRL/MR/6110-08-9102, February 19, 2008 (S//NF).
9. D.A. Kidwell and J.C. Owrutsky, "Vehicle Exhaust Tagging System", NRL/MR/6170-09-9201, September 9, 2009 (FOUO).
10. Gina Lawson, Tim Bays, Warren Harper, Bob Wright, Scott Harvey, Tim Johnson, Tom Blake, David Kidwell, and Jeff Owrutsky, Standoff Detection of Fuel Taggants (U), Final Report Cantaloupe, PNNL-NSD-3398, Prepared for DOE Office of Intelligence, Applied Technologies Program, (2009). (S//NF)
11. D.A. Kidwell, J.C. Owrutsky, "Fuel Additives for Vehicle Tagging, Tracking, and Locating", NRL Memorandum Reports, NRL/MR/ NRL/MR/6111--15-9615, April 27, 2015. (FOUO)

#### **F. Letter Reports**

1. "Interim Report on the Analysis of LSD and Marijuana", D.A. Kidwell, and R.J. Colton, NRL Letter Report 6170-1230a:DK:ab, 13 Nov. 1984.
2. "Final Report on the Analysis of LSD", D.A. Kidwell and R.J. Colton, NRL Letter Report 6170-76:DK:al, 4 March 1986.
3. "Failure Analysis of Magnesium Flare Powders", S. Hues and D. Kidwell, 6170-



37:SH:a1, 15 January 1987.

4. "The Analysis of an Acid Metabolite of PCP", D.A. Kidwell, 6170-172:DK:a1, 26 March 1987.
5. "Toxi Lab - Final Report", L. Cullen and D.A. Kidwell, 6170-467a, 23 October 1987.
6. "Microassay on A Card (MAC) - Progress Report", D.A. Kidwell.
7. "Indium Slide Immunoassay - Interim Report", C.A. Ladouceur and D.A. Kidwell.
8. "Potential Problems with Fluorescent Polarization Immunoassays", D.A. Kidwell, 4 August 1989.
9. "The Analysis of Marijuana and Its Metabolites in Saliva", D.A. Kidwell, 10 April 1990.
10. "Comments on Hair Analysis for Drugs of Abuse: No Evidence for Racial Bias", D.A. Kidwell and D.L. Blank, 29 July 1991.
11. "Derivatizing LSD to Improve Chromatographic Performance", D.A. Kidwell and M.S. Vincenz, October 26, 1992.
12. D.A. Kidwell, F.P. Smith, F. Shinohara, J.D. Kidwell, C. Harper, K. Roarty, K. Bernadt, R.A. McCaulley, R. Gill, and E.R. Voigt, "Cocaine and benzoylecgonine concentrations in the Daily Urine, Sweat Patches, Saliva, Skin Swabs, and Hair Specimens of Drug Treatment Patients", September 2005.
13. K.P. Williams, S.L. Rose-Pehrsson, and D.A. Kidwell, "Submarine Atmosphere health Assessment Program (SAHAP) Validation Program: Assessment of Passive Badges for Long-term, Low-Level Air Monitoring on Submarines – Chamber Validation", September 2005.
14. K.P. Williams, S.L. Rose-Pehrsson, and D.A. Kidwell, "Submarine Atmosphere Health Assessment Program (SAHAP) Validation Program: Assessment of Passive Badges for Long-term, Low-level Air Monitoring on Submarines - Nitrogen Dioxide Badge Validation", September 2005.
15. K.P. Williams, S.L. Rose-Pehrsson, and D.A. Kidwell, "Submarine Atmosphere Health Assessment Program (SAHAP) Validation Program: Assessment of Passive Badges for Long-term, Low-level Air Monitoring on Submarines-Monoethanolamine Badge Validation", September 2005.

## **G. Other Technical Papers and Oral Presentations**

### *Oral and Written*

1. "Selective Detection of Biologically Active Molecules by Secondary Ion Mass Spectrometry", R.J. Colton, D.A. Kidwell and M.M. Ross, 1984 Scientific Conference on Chemical Defense Research, Aberdeen Proving Grounds, MD, November 1984 and



Proceedings.

2. "Secondary Ion Mass Spectrometry: High Mass Molecular and Cluster Ions", R.J. Colton, D.A. Kidwell and M.M. Ross, Texas Symposium on Mass Spectrometry and Proceedings, John Wiley & Sons, April 1986.
3. "Desorption Ionization Mass Spectrometry of Toxins", D.A. Kidwell and M. Ross, Proceedings of 1986 Scientific Conference on Chemical Defense Research, CRDEC, Aberdeen Proving Grounds, MD, 18-21 November 1986.
4. "A Comparison of MS/MS Methods for the Detection of Selected Toxins, M.M. Ross, D.A. Kidwell, and J.H. Callahan, Proceedings of 1987 Scientific Conference on Chemical Defense Research, CRDEC, Aberdeen Proving Grounds, MD, 17-20 Nov. 1987.
5. "Indium-Coated Membranes versus Nitrocellulose Membranes for Use in A Spot Immunoassay", C.A. Ladouceur and D.A. Kidwell, Proceeding of 1987 Scientific Conference on Chemical Defense Research, CRDEC, Aberdeen Proving Grounds, MD 17-20 Nov. 1987.
6. "Non-Invasive Testings Methods. Hair, Sweat, and Saliva as Alternatives to Urinalysis for Detering Drug Use", D.A. Kidwell and D.L. Blank, Proceedings of Counterdrug Law Enforcement: Applied Technology for Improved Operational Effectiveness, Nashua, NH Oct. 24-27, 1995, pp. 16-1 to 16-21.
7. "What Does Hair Analysis for Drugs of Abuse Measure?", D.A. Kidwell, Southern Association of Forensic Scientists Newsletter, March 1996. (PAPER AWARD WINNER)
8. "What Does Hair Analysis for Drugs of Abuse Measure?", D.A. Kidwell, Midwestern Association of Forensic Scientists Newsletter, April 1996. (PAPER AWARD WINNER)
9. "What Does Hair Analysis for Drugs of Abuse Measure? Comparing Hair and Sweat for Detection of Cocaine Use", D.A. Kidwell, M.A. Blanco, and F.P. Smith, Proceedings of the 14th Meeting of the International Association of Forensic Sciences, August 26-30, 1996, Tokyo, Japan.

#### **H. Book Chapters**

1. "Secondary Ion Mass Spectrometry (SIMS): A Multi-Dimensional Technique", R.J. Colton, D.A. Kidwell, G.O. Ramseyer and M.M. Ross, *ACS Symposium Series*, 291, p. 160.
2. "Secondary Ion Mass Spectrometry: High-Mass Molecular and Cluster Ions", R.J. Colton, D.A. Kidwell and M.M. Ross, in *Mass Spectrometry in the Analysis of Large Molecules*, Edited by C.J. McNeal, John Wiley & Sons, Inc. 1986.
3. "Hair Analysis: Techniques and Potential Problems", D.A. Kidwell and D.L. Blank, in *Recent Developments in Therapeutic Drug Monitoring and Clinical Toxicology*, Edited by Irving Sunshine, Marcel Dekker, Inc., New York, 1992, pp. 555-563.

4. "Caveats in Testing for Drugs of Abuse", D.A. Kidwell, in *Methodological Issues in Epidemiological, Prevention and Treatment Research on Drug Exposed Women and Their Children*, National Institute on Drug Abuse Monograph #117, Edited by M.M. Kilbey and K. Asghar, U.S. Government Printing Office, 1992.
5. "The Microassay on a Card - A Rugged, Portable Immunoassay", D.A. Kidwell, Proceedings of Technology 2001, NASA Conference Publication 3136, Vol. 1, San Jose, CA, December 3-5, 1991, pp. 183-190.
6. "Pi Overlapping Ring Systems Contained in a Homogeneous Assay: A novel, homogeneous assay for antigens", D.A. Kidwell, *Proceedings of Advances in Fluorescent Sensing Technology*, SPIE Vol. 1885, Los Angeles, CA, 19-20 January 1993.
7. "PORSCHA - A Novel, Homogeneous Assay for the Detection of DNA/RNA", D.A. Kidwell, *Proceedings of Advances in Fluorescent Sensing Technology*, SPIE, Vol. 2388, San Jose, CA, 6-8 February 1995.
8. "Environmental Exposure - The Stumbling Block of Hair Testing", D.L. Blank and D.A. Kidwell, in *Drug Testing in Hair*, Pascal Kintz, Ed., CRC Press, Boca Raton, FL, 1996, pp. 17-68.
9. "Monitoring and Deterring Drug Use", D.A. Kidwell, J.C. Holland, and M.A. Blanco, ONDCP/CTAC Proceedings, 17 35-44. (August 1997).
10. "Testing for illicit drugs via sweat and saliva analysis: application to the detection of body packers", D.A. Kidwell and William P. Gardner, 1999 ONDCP International Technology Symposium, March 8-10, 1999, Washington, DC, pp. 21-1 to 21-15.
11. "A Fieldable, Saliva-Testing System for Drugs Of Abuse", D.A. Kidwell and Bernard J. Van Wie, Proceedings of ONDCP 2001 International Technology Symposium, San Diego, CA, June 27, 2001.
12. "Susceptibility of PharmChek™ Drugs of Abuse Patch to False Positives from Environmental Contamination", D.A. Kidwell, Melissa J. Long, and Frederick P. Smith, Proceedings of ONDCP 2001 International Technology Symposium, San Diego, CA, June 27, 2001.
13. "Testing for Driving Under the Influence of Drugs: Setting Impairment Levels" D.A. Kidwell and Lesley A. Riggs, Proceedings of ONDCP 2003 International Technology Symposium, San Diego, CA, July 9, 2003.
14. D.A. Kidwell and Sotiris Athanaselis, "Forensic Cocaine Analysis", in *Handbook of Forensic Drug Analysis*, F.P. Smith, Ed., Elsevier Publishers, 2005, pp. 235-275.
15. "Passive Exposure, Decontamination Procedures, Cut-Offs, and Bias: Pitfalls in the Interpretation of Hair Analysis Results for Cocaine Use", D.A. Kidwell and F.P. Smith, in *Analytical and Practical Aspects of Drug Testing in Hair*, Pascal Kintz, Ed., CRC Press,

Boca Raton, FL, August 2006, pp. 25-72. Approval #06-1226-1086.

16. Harvey F. Doty, Bernard J. Van Wie, Gregory Hooks, Janet E. Ebaugh, Sarah J. Haarsma, Hajime Fuchida, Gary J. Cheng, Bingwen Liu, David A. Kidwell, Irene R. Beattie, Burton D. Schmuck, "Enhancing Educational Motivation among Native High Schoolers: Cutting Edge Nanoscience Placed in an Environmental Water Quality Context," *Innovations 2007*, W. Aung, *et al.* (eds.), INEER, Arlington, VA, Chapter 44, pp. 484-493, 2007.
17. D.A. Kidwell, "Trace Analysis of Elements in a Palladium Matrix", Proceedings of the 14th International Conference on Condensed Matter Nuclear Science, Hyatt Regency, Washington, DC, August 10-15, 2008 (invited talk), approval#08-1226-2516. On the web at <http://www.lenr-canr.org/LibFrame1.html>. David A. Kidwell, "Analysis of Elements in a Palladium Matrix" in Proceedings of the 14th International Conference on Condensed Matter Nuclear Science and the 14th International Conference on Cold Fusion (ICCF-14), 10-15 August 2008, Washington DC, General Editors: David J. Nagel and Michael E. Melich, Theory Editors: Rodney W. Johnson and Scott R. Chubb Copy Editor: Jed Rothwell, ISBN: 978-0-578-06694-3, (2010) pp.180-194.
18. David A. Kidwell, David L. Knies, Kenneth S. Grabowski, and Dawn D. Dominguez, "Yes, Virginia there is Heat, but it is Likely of Chemical Origin" Proceedings of the 15th International Conference on Condensed Matter Nuclear Science, Eds., V. Violante and F. Sarto, ENEA, Rome, Italy, 100-109, 2012.
19. D.L. Knies, K.S. Grabowski, D.A. Kidwell, V.K. Nguyen, and M.E. Melich, "Differential Thermal Analysis Calorimeter at the Naval Research Laboratory", Proceedings of the 15th International Conference on Condensed Matter Nuclear Science, Eds., V. Violante and F. Sarto, ENEA, Rome, Italy, 11-15, 2012.

## Testimony

Testimony before the Subcommittee on National Security, International Affairs and Criminal Justice, June 5, 1998 hearing on drug treatment and testing, Congress of the United States House of Representatives, Committee on Government Reform and Oversight.

Expert witness on hair testing in *U.S. vs. SSgt Beard*, Bolling AFB, DC, March 2002 (not guilty).  
Expert witness on hair testing in *U.S. vs. , Andrews AFB, MD*, April 2002 (guilty).

Expert consultant on hair testing in *U.S. vs. Sgt Brust*, Keesler AFB, MS, April 2002, (accepted an article 15 and received a UOTHC discharge)

Expert consultant on drug testing in *U.S. vs. SrA Justin D. Hall*, Shaw AFB, SC, Feb 2007

Expert consultant on drug testing in *U.S. vs. SSgt Mack*, Shaw AFB, SC, May 2007 (not guilty).

## **I. Formal Recognition**

### *a. Honors, Awards and Fellowships*

- National Science Foundation Undergraduate Award, summer 1976.
- National Research Council/Naval Research Laboratory Research Associate (1982-1984).
- 1994 NRL Chemistry Division best applied paper award
- 1995 NRL Edison Patent Award
- Midwestern Association of Forensic Scientists and Southern Association of Forensic Scientists, Paducah KY, Oct 15-20, 1995 (Paper Award Winner).
- 1998 NRL Edison Patent Award with Richard Colton and Gill Lee.
- 2001 Federal Laboratory Consortium for Technology Transfer Award with Richard Colton.
- 2002 NRL Chemistry Division best applied paper award for "Susceptibility of PharmChek™ Drugs of Abuse Patch to Environmental Contamination"
- Certificate of Recognition and award from NASA for the "Real-time biochemical assay telemetering system" on July 5, 2002.
- NRL Technology Transfer Award on September 2, 2003 for efforts that have contributed materially to the Department of the Navy.
- 2004 NRL Edison Patent Award

### *b. Professional Committees*

- Advisory board for International Journal of Legal Medicine (1998 to 2002).
- National Institute of Drug Abuse grants evaluation committee for Human Development Research, (member 1994-1997).
- Local Organizing Committee, Fifth International Conference on Secondary Ion Mass Spectrometry, September 29-October 4, 1985.
- Member of SAMHSA Drug Testing Advisory Board 2001.